**North Carolina Coastal Buoy Data**

**Introduction**

The North Carolina coast along with most of the Atlantic coast is monitored by a series of permanently placed buoys. The buoys house an instrument package of sensors that measure numerous parameters including sea surface temperature, sea level, wind speed, wind direction, and salinity. Data collected by the buoys are considered “***spatial data***” as they are tied to a specific latitude and longitude. Data are collected in near “real-time” and are archived and on a server for access by scientists, students, and concerned citizens. The North Carolina buoy data may be obtained at the following two web sites:

<http://carolinasrcoos.org/>

<http://www.ndbc.noaa.gov/maps/NorthCarolina.shtml>

The National Data Buoy Center houses data for the United States coasts as well as a number of permanent open-ocean buoys that are part on the tsunami early warning system. Below are sources for this information:

East Coast Historical Data- <http://www.ndbc.noaa.gov/maps/southeast_hist.shtml>

Deep-Ocean Assessment and Reporting of Tsunamis (DART and DART Data)- <http://www.ndbc.noaa.gov/dart.shtml>

**Earth/Environmental Essential Standards**

These data are particularly well suited for small group/inquiry projects and problem-based or scenario driven lessons. The applicable EES standards are listed below:

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| **EEn.2.3.1**   * Explain how water is an energy agent (currents and heat transfer). |

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| • Explain how the density of ocean water is affected by temperature and how this results in  major ocean currents distributing heat away from the equator toward the poles.  • Explain how coastal climates are moderated by water (due to its high specific heat capacity) in  comparison to inland climates. |

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| **EEn.2.4.2**   * Evaluate human influences on water quality in North Carolina’s river basins, wetlands and   tidal environments. |

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| **EEn.2.6.2**  • Summarize natural processes that can and have affected global climate (particularly El Nino/La Nina,  volcanic eruptions, sunspots, shifts in Earth’s orbit, and carbon dioxide fluctuations). |

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| **EEn.2.6.4**   * Attribute changes to Earth’s systems to global climate change (temperature change, changes in   pH of ocean, sea level changes, etc.).  • Explain how changes in atmospheric composition contribute to ocean acidification. Analyze its  effect on ocean life and its connection to global climate change.  • Explain how changes in global temperature have and will impact sea level.  • Analyze how sea level has been affected by other earth processes such as glaciations and tectonic  movements. Consider long- and short-term changes. |